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IDENTIFICATION AND INTERPRETATION OF TECTONIC FEATURES
FROM ERTS-1 IMAGERY

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Title: Identification and Interpretation of Tectonic Features from ERTS-1 Imagery

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GSFC ID number: PR001 Dr. Monem Abdel-Gawad, Principal Investigator

Problems: So far we have not received any color composite images which were requested. Also we did not receive any of the black and white imagery requested in retrospect. Non-delivery of retrospect orders particularly the color composites is hampering the progress of our investigation.

Accomplishments: We completed plotting earthquake epicenters on imagery covering the Peninsular Ranges, Mojave Desert, Colorado Desert, the southeastern side of the Sierra Nevada block, and parts of Sonora, Mexico. Correlation of seismicity to the fault pattern inferred from the imagery is in progress.

We also completed plotting of Mercury deposits in the Transverse and Coast Ranges of California on the MSS Imagery. Detailed correlation with fault structures is in progress.

Preliminary examination of imagery around the Gulf of California was completed. Five areas of particular interest to the problem of the geologic structure of Baja in relation to mainland Mexico were identified as high priority areas in the investigation.

Plans for next period: We plan to pursue the apparent correlation of mercury deposits with transverse faults further. We also plan to analyze the high priority scenes across the Gulf of California in more detail.

Significant 1. Seismicity and Fault Pattern:

results: Many criteria of active or recent fault movements are observable in the imagery. We found that where earthquake epicenter clusters occur. Evidence of recent fault movements is generally observed. The opposite is not necessarily true: there are areas where evidence of recent faulting is observed, often along major known faults which are peculiarly devoid of significant seismicity.

A tentative conclusion is that the seismicity pattern alone can often be a misleading criteria for potential earthquake hazard. The feasibility of recognizing geomorphic criteria of recent fault movement from ERTS-1 imagery suggests that ERTS imagery should be used to map potentially active faults and utilize this data to develop better criteria for the identification of areas prone to future earthquakes.

2. Correlation of Structures to Mineral Deposits

An apparent correlation was observed between the distribution of mercury deposits in the California Coast Ranges Province and transverse fault zones trending west-northwest oblique to the trend of the San Andreas system. The significance of this correlation and the full extent of its implication on mercury exploration is under study.

Published articles: A manuscript entitled "The fault pattern of southern California - a model for its development" was submitted to NASA with the six months type II progress report and for publication in the Bulletin of the Geological Society of America. The manuscript contains analysis of ERTS-1, Apollo and Gemini photographs of southern California.

Recommendations: We would like speedy delivery of all requested (retrospect) imagery particularly color composites.
No significant changes in plans are recommended at the present time.